How to reduce the cost of 3D Printing

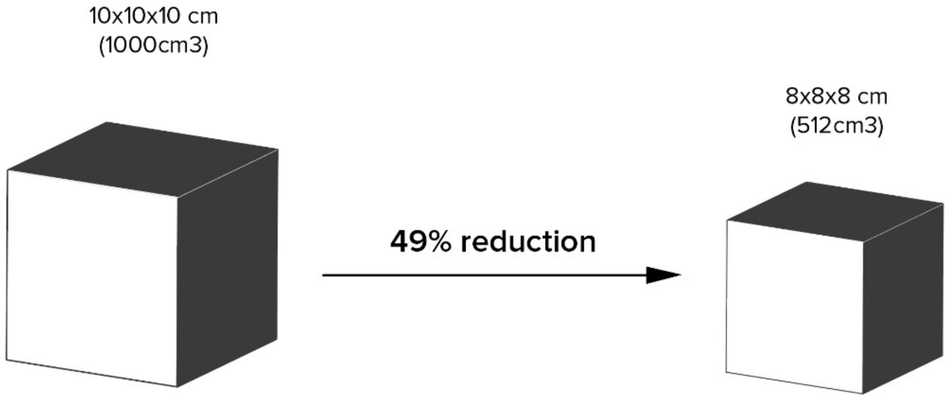
Written by Robin Brockotter

Learn how to make 3D printing more affordable by scaling down or hollowing out your model.

How cheap is 3D printing?

3D Printing is actually surprisingly affordable. The average price on the 3D Hubs platform alone is below $0.30 per cubic centimeter. Most software tools provided with FDM printers will automatically optimize an internal structure within the model instead of printing a solid model, reducing the price of the print. You can also reduce the price even further by scaling down or hollowing out your model.

Scaling down your 3D model



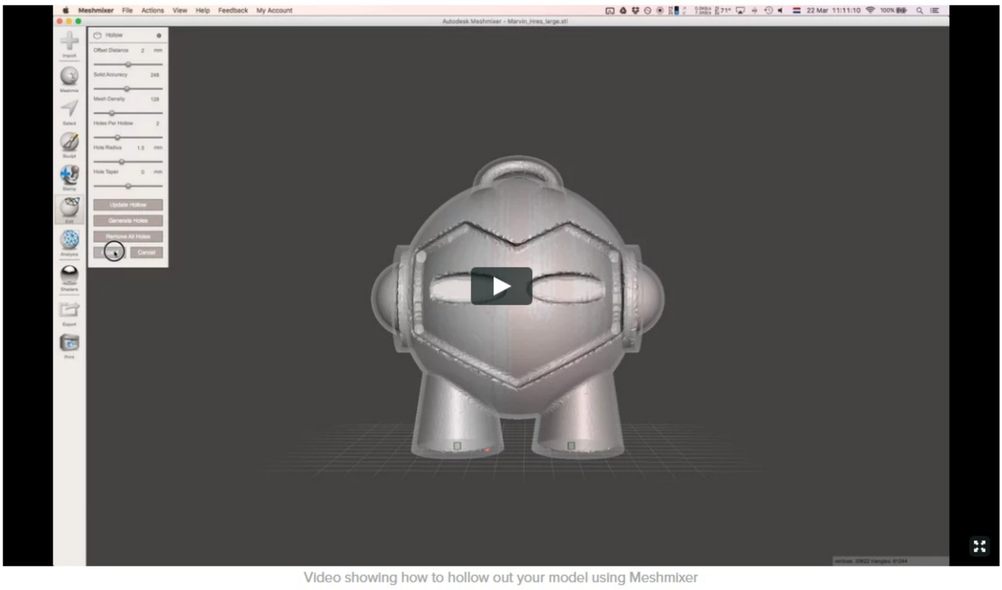
Shortening the sides of a cube from 10 cm to 8 cm reduces the volume by 49%.

If the size of your model isn't crucial to your print, you can easily scale down your model to decrease the cost. Remember, we're thinking in 3D. A 10×10×10 item is in fact double the volume of an 8×8×8 item, hence even a small reduction in the size of you model can reduce the price of your 3D print to a fraction of the original.

Scaling down your model is super easy, just check out our tutorial.

Hollowing out your model

While FDM 3D printers already print an internal structure within the model instead of printing a solid model by default, other 3D printing technologies including SLA, SLS and Binder Jetting do not automatically hollow out your model. Because of the way that these machines work, you automatically have a 100% solid object unless you make your model hollow (with leak holes) yourself. If having a solid object is not crucial for your design, hollowing it out is a great way to reduce printing costs substantially.



Video showing how to hollow out your model using Meshmixer

Step 1: Download Meshmixer (free) and install it on your computer.

Step 2: Open your model, click "Edit" -> "Hollow" and select how thick you want the walls to remain. 2mm is always a safe number and will be good enough for all printing processes. If you'd like a stronger or heavier object, you can always increase it.

Step 3: Some printing methods including SLA, SLS and Binder Jetting require leak holes to allow excess print medium to be removed after printing. You can add holes to your model by double-clicking the surface of your model where you want the excess material to come out of (e.g. the bottom, or where it's standing). If you misplaced a hole, you can easily remove it by double clicking the little red globe in the middle of the green cylinder.

Step 4: Click "Accept" and export your model from Meshmixer. You're done!

In our example, we had a 75% reduction in the object volume. Of course, this heavily depends on the specific model and the settings you choose, but as you can see, a few minutes of editing can save you a lot when it comes to 3D printing.

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